

(19) World Intellectual Property Organisation
International Bureau



(43) International Publication Date
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number:
WO 2005/049628 A1

- (51) International Patent Classification⁷: C07F 9/535
- (21) International Application Number: PCT/EP2004/011940
- (22) International Filing Date:
22 October 2004 (22.10.2004)
- (25) Filing Language: German
- (26) Publication Language: German
- (30) Priority Data:
103 53 759.7 17 November 2003 (17.11.2003) DE
- (71) Applicant (for all designated States except US): **MERCK PATENT GMBH** [DE/DE]; Frankfurter Strasse 250, 64293 Darmstadt (DE).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **IGNATYEV, Nikolai (Mykola)** [UA/DE]; Prinzenstrasse 104, 47058 Duisburg (DE). **WELZ-BIERMANN, Urs** [DE/DE]; Rebschulweg 8, 64646 Heppenheim (DE). **SCHMIDT, Michael** [DE/DE]; Weinbergstrasse 41, 64342 Seeheim-Jugenheim (DE). **KUCHERYNA, Andriy** [UA/DE]; Tiergartenstrasse 233, 42117 Wuppertal (DE). **WILLNER, Helge** [DE/DE]; Föhrenkamp 3, 45481 Mülheim/Ruhr (DE).
- (74) Common Representative: **MERCK PATENT GMBH**; Frankfurter Strasse 250, 64293 Darmstadt (DE).
- (81) Designated states (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated states (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: PROCESS FOR THE PREPARATION OF MONO- AND BIS(FLUOROALKYL)PHOSPHORANES AND THE CORRESPONDING ACIDS AND PHOSPHATES

(57) Abstract: The present invention relates to a process for the preparation of mono(fluoroalkyl)- or bis(fluoroalkyl)phosphoric acids, mono(fluoroalkyl) or bis(fluoroalkyl) phosphates and the corresponding phosphoranes thereof, comprising at least the reaction of a bis(fluoroalkyl)phosphinic acid or a (fluoroalkyl)phosphonic acid or a corresponding derivative of these acids with anhydrous hydrogen fluoride.